Vol. VI. No. 23. November 11, 1909

THE JOURNAL OF PHILOSOPHY
PSYCHOLOGY AND SCIENTIFIC METHODS

SPACE

SPACE has seemed to many thinkers an easier category than time or causality. Personally, I regard it as more difficult to handle than either of these other categories. Not only is it intimately bound up with these, but it is also, so to phrase it, the key to substance.

There are two ways of approach to space as to the other categories, the empirical and the ontological or metaphysical. The empirical study is a necessary preliminary to the metaphysical. It sharpens the vision and sets the problem. Without it, the thinker who attacks ultimate questions can only grope in darkness. I shall presuppose, accordingly, in the following analysis that the reader is able to distinguish between perceptual, normal empirical, and mathematical space, and knows somewhat of their genetic and logical nature.

Is reality spatial? This question has interested me vitally for a considerable time. The reason for this interest is not far to seek. If reality is spatial how can we place consciousness in it? Is such a location of consciousness in a spatial universe possible as will avoid dualism and do justice to the *motives* lying back of the double aspect theory of the relation of mind and body without the acceptance of that theory itself? Can we settle consciousness in a spatial universe clearly and definitely without giving it more nor less than its due?

But I may be accused of using an ambiguous term without definition. What is this reality concerning which I inquire whether it is spatial or not? I do not hesitate to answer—however materialistic it may sound—that reality for me is nature, and consists of such things as I can handle or affect indirectly through machines, be they dynamos or levers. But, while I am a naturalist, I am not so sure of the entire nature of this nature as are the materialists and energists. If I can settle consciousness inside as a *constituent* of certain highly organized parts of nature—while *not coextensive* with those parts, as

the double-aspect theory would have it—I may be able to pave the way for peace between these factions. Nature is, then, for me the ultimate term; but I am convinced that she has been eviscerated by materialists and enervated by idealists. Theory has never done justice in a critical way to her inwardness, to her volume-continuity and activity and content, so to speak; mechanics universalizes surface analogies.

Is nature spatial? Science asserts that it is. Everywhere in physics are calculations which deal with distance, and astronomy produces magnitudes which astonish the imagination. Is philosophy able to agree with science on this point, or is it forced by its analysis to deny what seems so apparent to common sense when it looks from the mountain top, or crosses the ocean, or digs a ditch, and to science when it calculates the return of a comet two hundred years hence?

Philosophy has met the weighty arguments of science and common sense in two main ways. It has either made the distinction between phenomena which are spatial and reality which is not, or it has maintained that reality is experience.

Those who assert that reality is experience are divided into two main camps, the absolutists and the empiricists. The first are definitely opposed to the spatial character of reality. (Taylor and Bradley have taken a definite position against space.) The second party have not as yet clearly expressed themselves. Certainly, however, some thing-experiences are spatial in character even though they lack stability and vanish like gossamer threads. My purpose, however, is not critical, but constructive. I wish to present a view which may withstand criticism. Accordingly, I leave idealism to satisfy those whom it can satisfy.

The typically Kantian position, which was referred to above, seems to me, in its doctrine regarding space, to be an inadequately justified assumption. The fact that our thing-experiences, whether at the perceptual or completely categorized level, are spatial does not imply that nature apart from our experience—for Kant, the noumenal world—is not also spatial. Experiential space may correspond to the spatial character of nature as she exists independently of the individual's experience. What is necessary is a critical study of what we should mean by space if this were so. The "Transcendental Æsthetic" does not disprove such a position; it does not even concern itself with anything but the most naïve realism in regard to space, which, of course, it easily conquers. If, then, one could prove that the things he handles, and measures, and superposes upon one another have an existence independent of his thing-experiences which correspond to them, no adequate reason for denying spatiality to nature in herself would remain. Things in nature, as a macrocosm which

includes our body, do exclude one another. All our methods of automatic registration and measurement indicate this. Only an unconquerable logical contradiction, accordingly, would give us the *right* to be sceptical.

But it may be replied that, in the "Dialectic," Kant has advanced an argument against the spatial character of reality. I do not read it so. It seems to me, again, only directed against naïve realism, the belief that the world of our construction exists by itself. Even if the antinomy stands under modern mathematical definition, this is all it could prove. It is really only supplementary to the "Æsthetic" and is powerless to affect the argument for the spatial character of reality as existent independently of our construction.

Can the spatial character of reality be indicated apart from all questions of finite and of infinite? I think so; I even regard it as a mistake to suppose that this problem of the finiteness or infinity of our universe has any bearing upon whether or not reality is actually spatial. Rather, if we believe that nature, as a construction, must always take its departure from the body, as a part of nature as reality, the reason why this antinomy arises is clear. Its basis is essentially motor. We have found no limit to our advance by proxy, *i. e.*, by telescope and calculation. The mathematical infinite, as variable, portrays this progress in experience. The mathematical infinite is an instrument, not a reality, and is intimately bound up with number analysis, and has only an indirect connection with physical space—a connection which, as Poincaré has pointed out in the case of continuity, has had, however, a healthy influence.

Another logical difficulty has had a baleful effect upon our problem. It is here that the empirical study to which I referred at the beginning is as a lamp to our feet. It shows us that space is neither a receptacle nor a thing, but that in nature things are experienced, and thought of, as extended and in dynamic relation one with another. Extension has here a basis in measurement, and has grown in importance with the need felt for exact measurement. Instruments and standards rather than mathematical conception give us the meaning of "extended" in nature. That this was true from the first the history of mathematics evidences.[1] We are now prepared for the logical difficulty. If things, as parts of reality, are extended, do they possess extension as an attribute? I reply that *in reality there are no attributes.* To think of reality in this fashion is to carry over a logical realism uncritically, as did Descartes and Spinoza. The division into subject and qualities, or attributes, is of value in reflective analysis in experience, but even in non-reflective situations this dichotomy lapses. This is not the place for the de-

[1] *Vide*, Mach, "Space and Geometry."

tailed study of this reflective instrument. I content myself with saying that there is no necessity to transfer a subject-substance and inherent attributes into reality and much reason against such fatuity. But because reality does not possess attributes, it is not, therefore, wrong to analyze nature and to think of it in certain diverse ways. Only he who has a false idea of the rapport, or correspondence, of our individual experience and nature as macrocosm, could assert this. To conclude, things are extended, but extension is not an attribute.

If, then, reality is extended how shall we best understand this extension? Certainly not as geometrical space which is attained only by abstraction and idealization. This is not, however, to deny the utility of mathematics in science. Rather is it along the line of activity and organization that we must proceed. But in this region scientific experiment alone can give our idea clear definition. The meanings which go to make our idea of the voluminous character of nature are at once seen to be many. All the so-called primary qualities enter together. Things are relatively impenetrable, relatively solid, and relatively hard. It is not from isolated particular sensations that these meanings are gathered, but rather from experience of the reaction of different things on one another. Physics in its study of comparative densities, tenacities, hardnesses, and physical chemistry in its examination of the effect of temperature and pressure, are the complex grounds on which we judge. Certainly I do not wish to objectify a pressure sensation or a motor sensation, but that things cut one another or melt, or exclude, one another is as evident as that my body moves. It is not these facts that need to be overturned, but a false logic and theory of knowledge. The "substance-attributes" method of approach to reality, which for Berkeley formed the basis of any naturalistic realism and in conquering which he thought he had destroyed this latter, is not the true basis. Reality does not possess attributes which our ideas resemble.[2]

Evidently I have supported all that science could demand of

[2] Not resemblance, but tested correspondence which always has a motor basis, is the characteristic of ontological truth. I use the term ontological truth to characterize the rapport of our ideas with nature as reality, and empirical truth to indicate a relation within experience itself between ideas and perceptual experiences or other ideas. It is the confusion of these two kinds of truth that leads us to carry over uncritically the idea of resemblance which often holds in empirical truth to this other field. This paralogism is hard to conquer, so natural to us is uncritical realism. It is impossible to develop this distinction and its implications in this place, for it would carry us too far afield. We can at least affirm that the tested structure and activities of things in our experience correspond to, and are hence symbolic of, the structure and activities of things in reality.

metaphysics as a basis for its postulates. Science, yes; but not materialism. All this holds of the brain also as a part of nature; is consciousness therefore excluded?

In order to give the answer to this basal problem its proper setting, a digression is necessary. While there is no need to enter here in detail into the development of a critical attitude towards our experience, certain distinctions which have grown up must be noted. It is the misunderstanding of these distinctions that has led to the exclusion of consciousness from nature and hence to the belief in an ultimate and unconquerable dualism.

Before criticism enters into experience in any organized fashion common sense holds sway. Its view may be called natural realism. Things are regarded, *not as experiences, but as experienced.* This world of things, or nature, gradually had certain meanings assigned to it which have been carried farther and with greater exactitude and penetration by science. All these meanings are, I believe, necessary, inevitable, and correct, and stand for, and arise from, the nature of reality and of our position therein. But the theoretical interpretation of them has not been right. For our purpose the meaning which interests us most is that of independence, for existence, of the experiencer's mind. This independence of mind, which was a *theory-of-knowledge independence,* meeting the soul-body dualism, which had developed largely from different motives, was confused with it. A subject-object, or, better still, a mind-object, dualism linked itself with an entirely different, supposed soul-body dualism. This confusion was aided by the development of psychology, whose view-point, being that of a special science, supported rather than destroyed this fateful identification. To sum up: we have, as a result of this movement, the independence of nature of the individual's experiencing interpreted as an exclusion by nature of mind, *i. e.,* a supposed epistemological independence interpreted as an existential exclusion.

Now logical theory has attacked the epistemological dualism and made a duality of it, *i. e.,* a working, useful and inevitable distinction in the individual's mind. But psychology, holding still to the science point of view, makes the mind run, as it were, alongside a world of objects which it somehow knows but can not penetrate. Sometimes psychology has, indeed, been idealistic, but this was when its own conclusions weighed too heavily on its conscience. How can we satisfy the realistic feeling of science and common sense and, at the same time, the demands of logic? Let me not be ashamed of the faith that is in me. I say without hesitation, that only critical realism can do this. Thing-experiences are in my mind but the things as parts of reality, which correspond to these thing-experi-

ences, are not in my mind. *This exclusion is not based on the original theory which led to the exclusion of mind as such from nature.* My mind is excluded from the other parts of reality simply because it is found to be connected with only one thing, *viz.*, my body. When this logical and metaphysical analysis is once grasped, the epistemological dualism which led to the exclusion of mind from nature is seen to lapse. Let me put this analysis in a slightly different form in order to make sure that I am understood even if not agreed with. In reflection, an inevitable distinction arises between that which is accepted as a background and framework and that which is in process of testing and evaluation. When reflection is centered on nature, on perceived things, this framework is very stable. The resulting dichotomy, expressed in popular thought as that between things and ideas, has overflowed its limits and made of this distinction the ultimate existential dualism of science and common sense. Thoughts, feelings, and ideas were classified as mind, and looked upon as outside things which were spatial and different from it. How natural this was! But this is now seen to be the exclusion of one functional type of experience from another type. Gradually psychology drew *sensation?* also into this realm of mind, and the tortuous riddles of an insoluble, because wrongly based, epistemology had birth.

As a result of our whole analysis we have thus far achieved two main conclusions. Reality or nature is extended, organized, and active, and consciousness is not excluded from it, is not alien to it, but consciousness does not float free in nature as a ship without moorings. Physiology and psychology, normal and abnormal, indicate that it is born and dies with every pulse of attention. Is it necessary to repeat the arguments for this location of the individual's consciousness? I think not. Every thinker is, or should be, familiar with them.

Things in reality, although in dynamic continuity, exclude one another, but consciousness, the flow of experiencing, is not a stuff nor a thing alongside other things. It is a *variant* in the changes occurring in that part of reality we call the brain. In it alone are we on the inside of reality and participators in its process. It is a light that guides, but a light kindled by reality as friction kindles a flame.

If any one calls this position dualistic I can only answer that he has not understood my argument and still lingers in the dualism of natural realism, be it that of common sense or the sharpened Cartesian type. Neither is this position similar to the double-aspect theory. The double-aspect theory (*e. g.*, that of Ebbinghaus) is an attempt at logical legerdemain. It seeks to overcome dualism by

words and not by a profounder analysis. How, pray, can we think of substance as the possessor of aspects? But the motives that led to this theory must give it precedence to materialism.

With the results of this study as a basis, we shall at last be able to examine thoroughly the problem of ontological causation with the question of the efficiency of this variant, consciousness, as an illuminating point of departure.[3]

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THE PERCEPTUAL BASIS FOR JUDGMENTS OF EXTENT

IN 1887, in the course of experiments on the extent of movement, Loeb[1] was led to the supposition that the judgment of extent is based on the perception of the duration of the movement. Since then Kramer and Moskiewicz,[2] in 1901, and Jaensch,[3] in 1905, have felt that their experimental results led to the same conclusion. Woodworth,[4] in 1903, discredits the hypothesis. His chief objections are: (1) Duration may be varied without entirely destroying the approximate equality of the extents; (2) extent can be judged better than time; (3) compensatory constant errors with higher speed are insufficient; (4) if we judged by duration alone, speed distinctions would be reduced to a matter of visual space or perception of force.

In June, 1909, the writer published, along with other matter,[5] the result of a long series of experiments on the relation between the judgments of extent and duration in the case of rectilinear arm movements. His conclusion there was that "the experimental facts point to separate processes of judgment for the two magnitudes, extent and duration. The four methods of separate accuracy tests, confusion, correlation, and correction failed to justify the assumption that the perception of any one characteristic of a movement is more primitive or fundamental than that of any other. The judgment of extent seems to be based on a system of signs which have been learned to mean extent directly. The same seems to be true of both duration and velocity."[6]

In the July (1909) number of the *American Journal of Psychol-*

[3] See, however, an article on causality, this JOURNAL, Vol. VI., pp. 323–328.

[1] *Pflüger's Archiv*, 41, p. 124, 1887.

[2] *Zeitschrift für Psychologie*, 25, pp. 101–125, 1901.

[3] *Ibid.*, 41, pp. 257–279, 1905.

[4] "Le Mouvement," Chap. IV.

[5] "The Inaccuracy of Movement," H. L. Hollingworth, *Archives of Psychology*, No. 13, 1909.

[6] *Ibid.*, pp. 85–86.

ogy, Professor Leuba[7] reported experiments, on the results of which he arrives at conclusions quite opposed to those quoted in the preceding paragraph. "The comparison of the length of arm movements is made through the comparison of the duration of one or several of the sensations arising from the movement and of a particular value of the joint sensation called here the rate value."

In the face of such conflicting opinion the writer desires to present in abbreviated form the results of his experiments and to give certain additional reasons in support of his earlier conclusions.[8] From 600 to 800 experiments were performed on each of four subjects, by the method of average error, on extents ranging from 150 to 650 mm. and on corresponding durations ranging from 1 to 3.5 seconds. By using a piece of apparatus already described elsewhere,[9] all the movements, while they remained active, were free

TABLE SHOWING RELATION BETWEEN ERRORS OF EXTENT AND ERRORS OF DURATION

Deliberate

	EXTENT					DURATION				
Obs.	Trials	Per Cent. C.E.	Per Cent. V.E.	Per Cent. Right Guesses	r	Trials	Per Cent. C.E.	Per Cent. V.E.	Per Cent. Right Guesses	r
W.	450	6±2.0	13±0.6	59	.22	375	5±1.3	11±0.7	46	.31
H.	450	19±1.7	12±0.6	54	.56	375	16±2.0	12±0.9	52	.54
Bt.	287	24±3.8	18±1.5	64	.79	264	20±3.5	16±1.2	61	.67
L.	375	7±0.8	7±0.6	60	.54					
Averages		14±2.1	12.5±0.8	59	.53		13.7±2.3	13±0.9	53	.51
Incidental										
W.	375	8±1.7	13±0.8	49		450	10±1.8	20±0.9	53	
H.	375	9±1.3	12±0.6	56		450	8±0.9	12±0.6	58	
Bt.	264	15±2.2	15±1.2	65		287	17±2.8	20±1.3	63	
L.						375	5±1.5	13±0.9	56	
Averages		10.7±1.7	13.3±0.9	57			10±1.7	16.3±0.9	56	

from the *illusion of impact* which has vitiated so much of the work on movement. The apparatus gave simultaneous graphic records of the extent, duration, speed, and energy of every movement performed. For further details of the experiment and for a more complete presentation of most of the data used in the present article the reader must be referred to the writer's earlier monograph. The following table gives the C.E. and V.E. for the extents and their corresponding durations, when the observer tries to reproduce (1) the extent and (2) the duration of his first movement. In still

[7] *American Journal of Psychology,* July, 1909, p. 374.

[8] Professor Leuba's article was probably in the hands of the printer when "The Inaccuracy of Movement" appeared.

[9] H. L. Hollingworth, *op. cit.,* Chap. I.

other columns may be found the per cent. of right guesses when the observer guessed, after each trial, as to the probable direction of his error, and the coefficient of correlation between agreement of extents and agreement of durations calculated by the method of unlike signs. On the basis of these figures the writer draws the following conclusions.

1. The durations of extents intended to be equal have greater V.E. (16.3 per cent.) than the extents themselves (12.5 per cent.). There must be, then, some basis for the judgment of extent other than the perception of duration.

2. The C.E. seems to be bound up with the process of attention, the magnitude deliberately reproduced [extent (14 per cent.) or time (13.7 per cent.)] being greater than that of the magnitude incidentally reproduced [time (10 per cent.) or extent (10.7 per cent.)]. This evident separation between the magnitude attended to and that incidentally executed argues for separate processes of judgment for the two magnitudes, extent and duration.

3. If the perception of duration were the basis of the judgment of extent, incidentally reproduced durations should show as close correspondence as durations deliberately reproduced. This is not the case.

4. Extents agree as closely when the observers are reproducing duration (V.E. 13.3 per cent.) as when they are attending to the extent (V.E. 12.5 per cent.), but durations incidentally executed do not correspond as closely (V.E. 16.3 per cent.) as in deliberate experiments on reproduction of duration (V.E. 13 per cent.). That is to say, if either judgment is to be considered the more primitive and fundamental it is the judgment of extent rather than that of duration.

5. The coefficients of correlation between deliberate extents and incidental durations (+ .53) on the one hand, and between deliberate durations and incidental extents (+ .51) on the other, are positive. But all that this shows is the presence of positive correlation between extent and duration, no matter which factor is being attended to. There is as much evidence for the dependence of duration judgments on the perception of extent as for the converse.

6. If the observer is required to guess as to the probable direction of his error in the case of each attempt to reproduce either extent or duration, (*a*) the guesses in both cases correspond more closely to the actual errors of the extents (59 per cent., 57 per cent.) than to the differences between the durations (57.5 per cent., 53 per cent.); (*b*) the proportion of right guesses in experiments on extent (59 per cent.) is greater than that in experiments on duration (53 per cent.). These facts are unfavorable to the hypothesis that it is the perception of duration on which the judgment of extent is based.

Professor Leuba's chief argument is based on the proposition that the durations of movements judged shorter, equal, or longer than a standard fall out shorter, equal, or longer as compared with the duration of the standard. Unfortunately, neither the variability nor the reliability of the average is given, nor is the number of cases, from which a reader might compute the reliability himself. But even if the correspondence were found to be *complete* such statistical correspondence would throw no light whatever on the nature of the process of discrimination involved in the comparison of the two lengths. If Professor Leuba had kept accurate measurements of the depth of the wrinkles in the loose glove which covered the arm of the observer he would have found the same positive correlation—when the extents were judged shorter the wrinkles would have been found to be relatively shallow, and they would have been equal or deeper according as the judgment happened to be "same" or "longer."

It is a case in which denying one member of the disjunction disproves a conclusion which is not proved by the affirmation of the other member. In other words, even though the relations of the durations do coincide with the form of the judgment, this duration agreement may still be simply an incidental fact, on a par with the depth of the wrinkles in the observer's sleeve. With the rather constant speed characteristic of all observers in such experiments a greater extent must occupy a longer duration, an equal extent an equal duration, etc. To show that the durations *do not* agree as closely as the extents, as the writer has already done,[10] invalidates Professor Leuba's conclusion, while to prove that they agreed equally well would have no bearing whatever on the question of the perceptual basis of the judgment of comparison.

The movements reported in Professor Leuba's article were made in different parts of the arm's total swing, under different degrees of contraction, tension, joint position, etc. The only common factor was the time element. Now even to prove that under these unusual conditions the duration of movements is used as the basis for the comparison of their extent does not prove that this is what happens in other cases. But to show that even here the durations disagree more than the extents disproves the hypothesis completely.

With Professor Leuba's assertion of a special set of signs which serve as criteria for judgments of speed, the writer heartily agrees.[11] but he is convinced that along with this assertion should also go the recognition of the independent character of judgments of extent and duration as well.

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[10] "The Inaccuracy of Movement," Chap. IV., p. 40.

[11] *Ibid.*, pp. 61–62.

DISCUSSION

WHAT PRAGMATISM IS AND IS NOT[1]

THE confusion in regard to pragmatism by its critics on the one hand and the variety of doctrines included under that term by its defenders on the other hand make it highly desirable for all concerned that there should be a definite understanding as to what pragmatism means. Failing such an understanding, the term pragmatism should be dropped out of the vocabulary of philosophy. This would be a pity, as the term short-hands a good deal of circumlocution and has already been widely used. What place pragmatism shall ultimately come to have as regards various schools of epistemology or metaphysics, whether the old labels of idealist and realist, spiritualist and materialist, empiricist and apriorist, can still be retained, is of little consequence except to those who must set their house in order, providing that pragmatism as a doctrine must be reckoned with.

In the first place, pragmatism as a doctrine is so simple and so old as a matter of scientific procedure that it is impossible to understand why so much dust should have been raised about it by its opponents. It is simply the application of the ordinary method of the scientific testing of an hypothesis to philosophic hypotheses as well. It is certainly high time that philosophy, in many respects the oldest of the sciences, should take on scientific definiteness and severity or else regard itself as a department of poetry.

Now pragmatism, as so often stated, holds that you can not test the truth of an hypothesis or judgment independent of conduct. The truth of an idea or plan must be tested by the procedure to which it leads. You can, of course, insist with the medieval critics of astronomy that there must be seven planets because there are seven days in the week, etc., *i. e.*, from the *a priori* fitness of things, but the curiosity upon which science is based always insists on trying the assumption; and if experience indicates more planets, to revise the hypothesis to fit the facts. This is the "practical" testing of a doctrine in science.

The testing of a doctrine in terms of conduct, or comparing the anticipated consequences with the consequences to which it leads in being carried out, need not always mean material consequences. There is a conduct of the understanding as well as a conduct involving certain perceptual events as its outcome. The procedure

[1] Other recent contributions to pragmatism by the same author are: "Philosophical Tolerance," *The Monist*, Vol. XVIII., p. 298; "The Reality of Religious Ideals," *The Harvard Theological Review*, Vol. II., p. 58; "Truth and Meaning," *The Psychological Review*, Vol. XV., p. 172; "Truth and Agreement," *ibid.*, Vol. XVI., p. 55.

may be entirely of a logical kind as in formal logic and pure mathematics. But here, too, the idea is true only as it terminates consistently in its intended result. The consequences must be shown to follow from the definitions and not from assumptions or intuitions surreptitiously introduced in the course of the argument. The rules of logic, as the rules of ethics, have been adopted for their convenience in conduct.

Common sense and intuition may short-hand our scientific methods, and are valuable in many cases, but they are not truth, in the scientific sense, until the conclusions thus arrived at are systematically tested in the actual procedure of experience.

We sometimes have to choose between different rules or concepts. In this case we must ask ourselves what difference will it make if I choose one rather than another method of procedure. It may make no ultimate difference. The same problem can be solved by plain arithmetic or by algebra. Both solutions are equally true. Only habit and convenience, therefore, can decide between them. When two roads lead to the place to which I want to go, other things being equal, I take the most economic road. Esthetic or other motives, however, may influence me, besides the mere desire of arriving, and so I may choose the longest route. And so in the choice of hypotheses. But in any case the hypothesis is verified only as it terminates in the intended result, as its ideal consequences tally with the conditions which I have set myself to meet, whether purely logical or perceptual as well.

Now I certainly have a right to profit by previous experience, whether my own or that of others. I may have faith in a chart of the road already provided, without going through the trouble of mapping the routes in that particular neighborhood again. But this deductive truth rests no less on conduct; and if it should fail, in the process of adjustment, to satisfy the demands of further conduct or experience, it must be revised, however venerable or distinguished may be its ancestry. Truth about reality as a whole, or any part of it, however abstract, consists in the differences that reality makes to our reflective purposes in their historic realization.

To ask, therefore, whether a statement is true is equivalent to asking: What must we take the selected object as, in the procedure of experience? This is as true of the formula, $2 + 2 = 4$, as of the proposition, Socrates is mortal. For some purposes taking two pounds twice is equivalent to taking four pounds once. This obviously is not always so. Taking two women one hundred pounds each is not equivalent to taking one woman two hundred pounds, if the purpose be marriage. In the former case you will be thrown

into jail for bigamy. The intuitional character of the formula is due to the fact that we have forgotten the concrete procedure, the beads, for example, that were used by the primary teacher to overcome our stolid incredulity. The only way that you can know that you know is by trying your knowledge out, and even then, owing to the finitude of our nature and the complexity of reality, our certainty is decidedly empirical. We no doubt confront the environment with all sorts of tendencies or categories, more numerous than Kant's table, but truth they are not until they are reflectively tried out.

But is not truth agreement with reality? the hard-headed critic always comes back. Yes, certainly, *i. e.*, with the reality which we intend, which may be the constitution of number or of a chemical compound. We rarely ever aim at reality as a whole, any more than we aim at a bear as a whole when shooting at him. The subject of our judgments is almost always a selected part of reality, not reality in general. But the pragmatist doctrine so far from denying that truth is agreement with its intended reality, has for its purpose to make explicit what we mean by such agreement. And what we mean is what science always has insisted, viz., that the consequences which follow from the hypothesis, or the constitution of the object *as we have conceived it* on the basis of past experience, shall tally with the consequences in dealing with the object, or of further experience, formal or empirical, according to the problem set. There is no such thing as agreement in the abstract; no way of finding out the truth of an idea by merely examining its eternal fitness in general. It must, in order to be true, fit its intended constitution, as Royce has so splendidly shown, and this can only be found out by observing the results of our experiment, by the tallying of our hypothesis with our systematic observations. The data thus caught, simplified, and organized through the network of our concepts, which in turn have been progressively modified to meet the demands of the data, is what we mean by the laws of science. Whatever reality may be, science is a systematic sorting of experience in the realization of our interests.

I suspect, however, that what has given rise to this long and confused controversy is not pragmatism as an epistemological theory, but the various epistemological and metaphysical consequences which some of the "pragmatists" have arrived at, supposedly by the pragmatic criterion, and which have been included by them and their critics under the general heading of pragmatism. Of course, if you include any professed pragmatist's results under pragmatism, then you will have an indefinite number of pragmatisms with hope-

less confusion of the epistemological issue.[2] Just because a professed pragmatist, even William James, happens to hold a doctrine does not necessarily make it part of the theory of pragmatism. His philosophic results would have to be tested by the pragmatic criterion, quite irrespective of his having subscribed to it. Even the best peoples's conduct does not always agree with their ideals. And the pragmatic criterion is an epistemological ideal, which we finites can, only by cumulative striving, if ultimately, realize.

Let us see briefly now what pragmatism is not. In the first place pragmatism does not involve that the true and the useful always coincide. Such an *a priori* assumption about the universe is anything but pragmatic. Truth may, of course, turn out to be useful. I would not say with a German scientist that the best part of science is *das es gar nicht anwendbar ist.* The utilitarian motive has often been important in the investigation of truth, sometimes on the part of the investigators, but more often in the material promotion of investigation. It is true, however, that the most important investigations in pure science, such as the beautiful researches in light and electricity, were carried on without reference to their utilitarian consequences by people inspired by a divine madness to discover the hidden harmony of things; and their results were finally patented by people who reaped where they had not sown. But whether researches are useful or not, their usefulness does not make them true. On the whole, we are doubtless better able to adjust ourselves to an environment because we know more about it, can respond to its characteristics, though in limited, pathological cases ignorance and deception may be more useful than truth. But the statement that truth is, on the whole, useful is a conclusion and not a part of pragmatism as an epistemological criterion. Whether it is a legitimate pragmatic result any one is free to test, where all hypotheses must be tested, in the procedure of experience.

In the second place, pragmatism is not equivalent to humanism. No doubt it is true, so far as we are concerned, that reality must pass through human nature to be known. We humans know reality by the differences it makes to our human, specific, reflective purposes in their attempt at realization. But it is not our being human that makes our hypotheses come true; it is their tallying with the constitution of the object aimed at, as it appears in further experience. And there is nothing to show that this experience, whether on its

[2] Lovejoy's "Thirteen Pragmatisms" is a measly allowance, when you consider the variety of human nature and the number of possible applications of the pragmatic method. But this is a good illustration alike of the ungenerous temper of the "intellectualist" and of his unscrupulousness in creating a prejudice against his opponent.

logical or perceptual side, is peculiarly human. The weight, or color, or size, or position of a thing is not peculiarly human as distinct from other animals. A "dog-faced baboon," so far as we know, has the same sort of perceptions that we have, and is subject to the same laws of association. If a dog-faced baboon or a tadpole should construct hypotheses or their equivalents, they would have to be verified in the same pragmatic way as human hypotheses are. It matters not what sort of finite being tries to arrive at truth, whether man, baboon, or angel, the test of truth, so far as we can see, would be the same.

If what is intended is the statement that the nature of reality is made over in knowing it and that therefore we are limited to the charmed circle of experience, this too is an unpragmatic assumption. While it is a mere circle to say that we can know reality only as it appears in cognitive experience, or for what it is known as, it is a gratuitous assumption to insist that what reality is known as, is contrary to what reality is, that the weights and distances and masses of things exist only as we humans take account of them. When we take account of them they have *meaning* for us, but our taking account of the qualities of things at all is generally forced upon us by their existence, which we must meet in order properly to adjust ourselves. At least it is not pragmatism to decide *a priori* that things are not what they seem.

May there not be cognitive beings superior to us humans? Or are the humanists absolutely convinced that we humans are the only cognitive beings in the universe? That certainly is no part of the pragmatic theory of truth; but, even if true, it is not being human that makes a proposition true, but its termination in the intended facts.

Is pragmatism, as a theory of truth, committed to the instrumental point of view as regards concepts? Not in the sense that truth exists solely for the sake of satisfying certain demands extraneous to itself, for example the biological end of adjustment. Truth sometimes finds its inspiration in such practical demands, but it sometimes finds its motive in scientific curiosity. In any case the test must be the same. Truth is always teleological, because it exists for the sake of a relation to a larger whole, but this relation need not be instrumental in the narrow sense that truth is an extraneous tool, like a knife, to be judged by its mere success. False ideas may be temporarily successful. Truth as a matter of fact must always be imitative of its object to a certain extent. It can never be conventional in its *content,* however conventional our *symbols* may be. In the case of knowing a system of truth it must be imitative of the content of the object; in the case of thing-objects it must be imitative

of certain qualities of the object. Inasmuch as our finite truth is not exhaustive, but always implies a more, a larger constitution to be investigated, it must be regarded, in so far as instrumental to its own completion, a means to its own more comprehensive end.

Can the pragmatic criterion be stated in terms of satisfaction? That depends upon what sort of satisfaction we mean. No doubt the seeking for truth has its own hedonic tone, according to its success or failure. But the satisfaction, so far as the truth interest is concerned, is the tone accompanying the testing of the hypothesis in procedure, so far as that special intent is concerned. But the truth satisfaction may run counter to any moral or esthetic satisfaction in the particular case. It may consist in the discovery that the friend we had backed has involved us in financial failure, that the picture we had bought from the catalogue description is anything but beautiful. But we are no longer uncertain as regards the truth. Our restlessness, so far as that particular curiosity is concerned, has come to an end. And this satisfaction may sometimes be strong, even when the practical outcome is against us. The rejected lover gets some peace of mind from knowing the truth as to his failure. But this is hardly the satisfaction of winning his suit.

Is pragmatism realistic? Only in so far as it intends a world beyond our finite cognitive purposes. The finite fragmentary intent must find its reality or correction in a larger whole. I do not know of any striving for truth which is not realistic in this sense. How could it be a striving for truth otherwise? But obviously a criterion of truth must be unbiased at the outset as regards the epistemological or metaphysical result of its application. The reality we seek to know may ultimately be more experience—yes, we must be willing to have it turn out to be an absolute unity of thought, if the procedure of truth leads that way. But pragmatism neither assumes at the outset that the object in order to make any difference to the cognitive purpose must itself be experience, nor does it assume *a priori* that reality can not possibly be what it is known as being, because external to experience. What reality is, what differences it can make, is precisely to be found out. The constitution of the universe is idealistic or materialistic, monistic or pluralistic, according as we must take it, as the outcome of the pragmatic test. But we must all start with the same criterion, else there can be no discussion of truth.

Truth is systematic meaning, systematic experience about the object. This meaning, in case we are striving to know other experience, must be identical with the content of the object; but the qualities of an object which is not experience may become content for us through perception. In any case truth is our systematic

percipi, as it is revealed in our specific procedure, whatever the metaphysical character of the object may turn out to be. We have no right to take for granted that what is to be known is more content, independent of our knowing, with which our preformed guess can be accidentally identical and so be called true in advance of verification.

It is difficult for me to understand what is meant by unverified truths—unverified science, truths which no one knows to be true, for if any one knows them to be true—God, or man, or monkey, they have fulfilled the pragmatic test. They are seen to terminate or find their completion in the intended object. If a proposition has no systematic basis in experience we speak of it as a mere guess. As that brilliant pragmatist, Xenophanes, puts it, "All are free to guess" and "These are guesses something like the truth . . . but by seeking they gradually find out what is better." In Xenophanes's time there was but little cumulated scientific observation. Hence he is naturally impressed with the guess character of his statements about the universe. When a supposition is based upon analogy and previous scientific observation we call it an hypothesis, but it is only as the hypothesis is fully tested in terms of the intended facts that we call it truth. Truth, therefore, so far as we finite seekers are concerned, is a limit which we are far from having realized. Whether we can realize it or not only the historical outcome of the pragmatic test can prove. It is certainly unpragmatic to say in advance that truth is unrealizable. In the meantime we have our provisional "truths."

I suppose the reason that some have insisted upon propositions being true in advance of being tested is that in individual experience, especially in an advanced stage of science, we find a large body of social truths, which we can take, for practical purposes, as ready-made. We find that truths exist independent of our individual verification, and then some assume that they exist independent of all verification. Seeing the agreement of the hypothesis of gravitation with its intended facts, they insist that the hypothesis must be true in advance of the discovered agreement, as though truth could be a guessing *in vacuo*. What they mean is that reality has a constitution in advance of our investigations and that so far as our cognitive nature is concerned the qualities of reality are not created but discovered. Whether they are created through our volitional nature, or exist independent of our act or positing, is a question which the application of the pragmatic method alone can determine. But all this controversy about preexisting truths is a lexicographical one and would be over if we recognized the established philosophic usage, as old as Xenophanes, that truth is systematic meaning, corrected and completed in its intended reality.

If we state truth thus, there can be no ultimate difference between truth and the test of truth. A proposition is *proven* to be true because it terminates in its intended object, imitates this either as regards its inner content or as regards its qualities. But it *is* true for the same reason. What makes the test of truth seem something different from the truth itself is that in the process of verification the test seems external to the intent of thought. It seems to happen to the idea in a more or less accidental way. But this is a superficial way of looking at the process of discovery. For, in the first place, the facts only happen to the intent of thought *because we are seeking them,* however much our meaning may have to be corrected in the process. In the second place, the test is our further experience about the object *as selected* by the intent. But the intent is not, taken by itself, the truth, any more than the consequences of further experience are the truth taken as external happenings. It is the intent as terminating in the selected facts which constitutes the truth. And this termination is the test of truth, or the intent as tested constitutes the truth.

Is pragmatism a theory of empiricism as opposed to rationalism and *a priorism?* No, pragmatism is not committed to any *a priori* doctrine of the origin of ideas or their connection. It is not committed to Hume's association theory any more than to Plato's pure dialectic. Pragmatism may be said to agree with rationalism in holding that truth has a formal side. An hypothesis or system must be internally consistent. But pragmatism insists that this is not sufficient: there must also be external agreement, or agreement of the hypothesis with its intended facts. As regards the other historic antithesis, that of empiricism and *a priorism,* pragmatism is equally non-committal. It is a theory of the nature of truth, not of the origin of its categories or postulates. Whatever demands or tendencies are inherited, they must be consciously tried out in experience as regards their agreement with reality before they can be called true. The categories might originate by use, inheritance, by natural selection, by divine implanting, or by mystical intuition, so far as pragmatism as a theory of truth is concerned. The question is: Will they work in simplifying experience and meeting the character of the environment? The theory of their origin must itself be subjected to the pragmatic test.

Is pragmatism at the outset committed to time and chance as the ultimate character of reality and, therefore, to the impossibility of any final truth? This again is a theory to be tested by its pragmatic outcome. *A priori,* eternalism may be the outcome of pragmatism as well as dynamism; or perhaps partly the one, partly the other. Because the discovery of truth is a temporal process, it does not follow

that truth relations as discovered are temporal. The truth $2 + 2 = 4$ may be eternal, however long was the evolution which led to its discovery. At any rate, there can be no such thing as pragmatic dogmatism.

A professed pragmatist may of course hold any of these doctrines, and a large number of them, either as his individual application of the pragmatic test or for other reasons. He may also, like myself, be an Episcopalian, a free-trader, etc. Do all the doctrines and practises of the Episcopal church become pragmatisms when a pragmatist belongs? I have known pragmatists to drink beer, to attend dime theatres, and even to swear. Are all such practises with their implied damnable theories of life therefore pragmatisms? And do they also come under *Scepticismus,* as the German critics would say? God forbid. It makes one's flesh fairly creep to think of all these uncanny associations—these sins on the part of our clever young critics, committed in the name of pragmatism. But are they not, after all, primarily sins against formal logic? A is a free-trader. A is a pragmatist. Therefore all pragmatists are free-traders. That looks very much like an illicit minor in the third figure. It might also be treated as a fallacy of composition. It would seem as though the "intellectualists" ought to have a little respect for formal logic.

If you say that in the above case pragmatism is not new at all, but as old as science, I would quite agree with you. No one more than the pragmatist has disavowed any intention at originality. It is better to be true than original. But the amount of dust raised seems to indicate that an old, implicit scientific procedure was but vaguely understood. If the result of this paper should be to convince my readers that they are all "pragmatists," then we shall have "peace on earth, good will to men" once more, than which no more blissful consummation could be desired, unless it be strife.

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REVIEWS AND ABSTRACTS OF LITERATURE

Logic, Inductive and Deductive. Adam Leroy Jones. New York: Henry Holt & Co. 1909. Pp. x + 300.

In the preface the author states that the book "is not designed to serve as an introduction to general philosophy. Its chief claim to novelty is in the arrangement of the subject-matter. The traditional arrangement, in which the deductive processes are presented first usually leaves with the student the impression that the method is chiefly deduction, and that there is no very close connection between this and the rest of the

subject. The arrangement, which is here adopted, was selected on pedagogical grounds and not in the interests of any epistemological theory."

The book is divided into three parts, entitled, respectively, "An Outline of Scientific Method," "Supplementary Methods," and "The Construction of Systems." By making the discussion of deduction subsequent to that of induction, Professor Jones successfully eliminates the evil of which he rightly complains. In this book the syllogism is more closely related than is customary to other parts of the subject and is deprived of undue importance. This achievement alone would entitle it to consideration. Moreover, the presentation employs a variety of apt illustrations which enables it to avoid the dead level of undisturbed monotony. While some parts follow the beaten path, as is natural in a subject like logic, the book has a certain freshness of treatment, and it offers a view of the subject that is commendably well-balanced and well-organized.

With regard to the arrangement of the subject-matter, it may be said that, while the plan of treating induction prior to deduction is in the main well executed, it involves a detail which is apparently both undesirable and unnecessary. The subject of induction follows upon the discussion of terms and propositions; and it jars one's sense of fitness, therefore, to find that before we can go on from induction to the syllogism we must once more discuss propositions, this time from the standpoint of conversion, obversion, and contraposition. I venture to add, also, that the author's remarks on the misuse of words seem more perfunctory than is consistent with the importance of the subject. A more serious criticism, however, can, as I think, be directed against the treatment of causation and coexistence. Here Professor Jones appears to have been entirely too submissive to the prevailing fashions. Causation is defined as an unconditional or necessary connection, and is properly distinguished from certain coexistences—such as that of gravity and inertia—which, though likewise universal, do not seem to be of a causal nature. The term "necessary," which is explicitly distinguished from "invariable" must be taken as synonymous with "unconditional," unless some mysterious connotation of a metaphysical character be intended. Professor Jones seems to mean that the terms are to be used as synonymous. But granted that causal connections are unconditional, this quality provides no differentia. Universal coexistences are quite as unconditional. The fact that two properties are universally concurrent means nothing in the world except that this concurrence is independent of all conditions. Incidentally, too, it may be remarked that, while the author says, speaking of gravity and inertia, "the sciences furnish innumerable instances of a like sort," in the very next sentence Bain is quoted as saying, "there are very few general laws of pure coexistence" (p. 83). Are these statements contradictory, or does the author mean to distinguish between coexistences and laws of coexistence?

With regard to the proof of these laws of coexistence, as distinct from laws of causation, the author contents himself with Bain's statement that they "can only be proved piecemeal; each stands on its own evidence of

observation in detail; no one assists us to prove another." If it is permissible for logic in this instance to set aside a question of method by a reference to "observation," it is permissible in any other case as well. The manner in which the proof of universal connections is habitually ignored by logicians is one of the curiosities of present-day logic.

This matter of universal connections requires emphasis because it is connected with a traditional inconsistency in the treatment of causation. This inconsistency reappears in Professor Jones's exposition. As was stated a moment ago, cause is here defined as unconditional connection. Such a connection is necessarily a universal connection. That causation stands for a form of universal connection appears, further, from the fact that causation is referred to as a form of law; and a law, we are told, "states a universal connection which actually holds true" (p. 81). There is only one sense, however, in which a causal connection can be regarded as a universal connection. A causal connection is universal only when the cause is a "total cause." The definitions of cause frequently imply total cause. Yet the methods employed to ascertain causal connections are habitually used to study partial causes. The "method of difference," for example, merely enables us to analyze out some factor which is a constituent of the total cause. In this, the more popular sense of the term cause, the connection is by no means universal, unless the connection be vaguely interpreted as a "tendency." How a connection that is truly universal, in the sense of having no exceptions, is to be tested, is a question that receives no notice, because it is not properly distinguished from the study of causal connections.

In this general context I may be allowed to add that the author's device of treating statistics as a supplementary method argues a misconception of the function of numbers in the proof of causal connections. Thus the "method of difference" is by preference limited to a single case of respective presence and absence on the part of the factor that is studied. This single case, however, is in the main merely an ideal limit. The number of cases necessary to prove a causal connection varies in inverse ratio to our knowledge of the conditions. If we are confident that the conditions are entirely under our control, as in the case of some laboratory experiments, a single instance may suffice; yet even then, as Aikins has pointed out, we are unwilling to consider an important conclusion as proved, unless the experiment is repeated, either by ourselves or by others. This sharp separation of statistics not only obscures the service performed by numbers in the elimination of irrelevant considerations, but it inevitably suggests that the "method of statistics" introduces a new principle, instead of being merely an application of the "method of difference" to units consisting of groups instead of individual cases. The author, in fact, states that the "method of statistics" is a different method (p. 190), and that the cause discovered by *this* method is usually only a part of the entire cause (p. 193).

In the application of Mill's methods the author recognizes, apparently, that the directions furnished by the methods are essentially counsels of perfection; that, instead of relying upon exact conformity to the demands

made by them, we, in fact, rely upon something quite different. An inductive inference is verified "when it fits the facts and no alternative inference does" (p. 88). This is both true and important, as far as it goes, but the author unfortunately does not attempt further analysis. When are we warranted in concluding that alternative inferences do not really fit the facts? The author invokes consistency, but consistency is a shifty term. It may mean absence of contradiction or it may mean absence of motivation. The doctrine that all doubt must be motivated, upon which Hobhouse rightly lays so much stress, and which has frequently been formulated, after a fashion, in courts of law, is apparently implied, but does not secure even a passing notice. This doctrine, furthermore, properly connects the subject of probability with completely established inference. Probability decreases with the degree of motivation. One may, therefore, doubt the expediency of treating probability as a supplementary method, as is done here; to say nothing of the advisability of placing all the emphasis upon the form of probability which is determined by the behavior of groups and which on this account lends itself to mathematical treatment. By isolating statistics and probability, the author gives the same false impression regarding the study of scientific laws as that against which he protests in the case of the syllogism.

Under the heading "Explanation" the question is raised (p. 239) whether, in the progressive reduction of knowledge to laws that are more simple and fundamental, the laws which constitute the limit of the process are to be regarded as inexplicable. The answer to the question is negative, for the reason that "reference to simpler and more fundamental laws is merely one method of bringing the data into a system." "The parts are explained," it is said, "by being given their proper places in the whole." Here, it seems, we may reasonably object that the author offers either too much or too little. The question should either not be raised, or the answer should be amplified so as to set forth in detail just what it means. In ordinary procedure the term explanation has a specific meaning because there is constant reference to laws which in the given situation are treated as ultimate. But when the attempt is made to eliminate everything that is ultimate we are on different ground, and we are then in duty bound to be specific or lay ourselves open to the suspicion that we are playing with the words "system" and "explanation."

As has been indicated, some of these comments make Professor Jones the scapegoat for the sins of his class. The criticisms, it is hoped, will not tend to obscure the genuine merits of the book, which make it a welcome addition to the literature of the subject.

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Logica Come Scienza del Concetto Puro. Filosofia dello Spirito, Vol. II. Second revised edition. Benedetto Croce. Bari: Guis. Laterza & Figli. 1909. Pp. xxiii + 429.

La Critica, the bi-monthly review of which Croce is editor, is devoted to literature, history, and philosophy. Even more than the "Estetica,"

this, the second volume of the author's philosophy, shows the marks of the journalist's sanctum. It, too, is no less a literary and historical than it is a philosophical treatise. Almost is a body shocked to find, in a book founded upon Aristotle's "Metaphysics," Kant's "Critique," and Hegel's "Logic," clear, terse description, familiar allusions to the poets, and even epigrams. And yet Croce will never be accused of writing literature philosophically; the present work lacks nothing in the severity of its logical interests—indeed, one of the gravest faults to be found with it is that it attempts too much in too scant quarters. As for Hegel, so for Croce; logic is the philosophy of philosophy. But to chart the bearings of pure reason in the world of practise and science is more of a task to-day than in Hegel's time. Had Croce been content to touch only the issues of traditional logic, he would have lost vivacity but gained power. In preferring to span four firmaments, though, in a single flight, he has been compelled to take the short straight line of dogmatism across each. And, in so doing, he takes the bread out of the critic's mouth; for to say the lightest word on half the questions raised in the "Logica" would be to review all contemporary thought; on the other hand, to judge Croce's own conclusions on any one of these is hazardous, because, where proofs are abridged or altogether omitted, praise and censure both go blindfold. Just how much, for example, Croce means by his great central equation: "Filosofia = pensiero = storia = percezione della realtà," the reviewer must confess he does not know, after much searching. Sometimes it seems to spell absolute idealism in bold letters. But how can that be when we read in many passages that neither the reality of percepts nor the knowability of reality in general can be questioned? Or when Croce explicitly repudiates the entire Hegelian procedure of deducing history from some "sacred number" of concepts? Again, the equation apparently spells critical realism, or, more exactly, something very much like the immanent realism which Mr. J. A. Stewart finds in Plato's doctrine of ideas. But again we hesitate; for, in his "pure concept," Croce has precisely Plato's "idea of ideas," and it is this that alone is truly real, truly philosophy, and truly history. One must often wonder whether he is doing anything more than to develop to its limits this epistemological absolutism which Plato left hanging in the air. Every concept, by as much as it leaves some relation essentially undetermined, by so much falls short of being completely real, and is hence, in the same measure, less than a "pure concept." So, Croce says, a "pure concept" is absolutely clear in the mind of him who thinks it, inasmuch as defective expression means, *ipso verbo,* unclarity of thought, which is a shimmering of relations. Any concept that is concrete but not universal, or universal without perfect concreteness, likewise is impure. As for further characteristics of conceptual spotlessness, we are told, with admirable but discouraging consistency, that "their exposition resolves itself into a complete account of the philosophy of spirit." Of course, then, every concept of every-day life, mathematics, and science becomes a "pseudo-concept" for Croce; for each is either empirical or abstract or doubly befouled. Worse yet, none is by any hook

or crook reducible (Croce does not say exaltable) to the "pure concept"; for each is cut to the pattern of practical life, and no amount of sewing will make the cloth whole again. Is it possible that our Neapolitan is indulging in an ironic *reductio ad absurdum* of absolutistic logic? If, as he reiterates, philosophy is *the* "pure concept," then there never have been and never will be philosophers. But how take that assurance at face value, as we read further that every man has a philosophy. for philosophy and religion are one and the same, and every man has a religion? Only one thing seems wholly clear; the author, writing four books in one, to wit, a complete logic, a book on the relation of philosophy to other disciplines, another work on error and method, and a history of logic from Socrates to Peano, has made one word do service for three or four; in short, he has admitted fatal equivocations. Were it worth while, the reviewer could point out a score or more of instances where "history" means now the flux of human events, now the manner of men's reconstructing the past, now the school-room discipline; or where "idealism" stands sometimes for the belief that there is no thinking without thoughts, and sometimes for a much less innocent German creed. But why exhibit the original sin of philosophy again? It is better to recognize the indubitable keenness of certain chapters, notably those on the categories (p. 163), mathematics and physics (p. 251), and the whole logistic movement (esp. p. 93). Here Croce's strong sense of reality makes his criticisms two-edged; they hew for the Philistine as well as for the metaphysician. We would not deny them the same cutting power elsewhere; the thinker has Hegel's nostrils for scenting abstractions and running down the underlying unity in opposites. Perhaps shorthand has betrayed him in the sections where his meaning is obscure or anathema. But his extensive analysis of the logic and concept-building of science echoes with so little original vigor the popular phrases about "arbitrary constructions," "devices for practical control," "regarding the mobile and spontaneous as fixed and determined," etc., that the reviewer, for one, would gladly believe the editor of *La Critica* to have carelessly mixed in with his proof-sheets at these passages the manuscript of some amateur contributor. The philosopher may be tickled by the flattery that science is only a handmaid of his household; but will he go further with Croce and restrict its duty and privilege to collecting specimens, ticketing them, and putting them away in good order? Will he then take the last step and say that *no scientist strives for truth at all,* that goal being reserved for the philosopher? Croce dares this much. Again one is on the verge of asking whether we have to do with a deep satire, but the context halts us.

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Reason, Thought and Language, or The Many and the One. DOUGLAS MACLEANE. London: Henry Frowde. 1906. Pp. xv + 583.

"These pages represent an effort to strengthen and revivify formal logic . . . by bringing it into closer connection with the living facts of

thought and speech." The alternative title is explained by the author's opposition to "the 'new logicians' who hold that there can be reasons without reason." "Except in the light of what is universal, thought can not exist." "The mind can never work from one point to another except through a universal." "An internal necessitation or confliction of ideas must be given . . . by means of a middle term." This standpoint explains the presence of such chapters as the following and gives a general indication of their contents: "The Justification of any Thought," "The One Sought in the Many," "Immutability of Rational Law," "Reason Regulates Thought," "Whatever is Rational is Syllogistic," "Universals, How Obtained."

The rest of the thirty-two chapter heads are about what one would expect to find in a rather advanced book on deduction. Induction receives but scanty treatment, and there is nothing whatever about historical and statistical methods. For with Mr. Macleane all logic is formal. "In truth, neither in the hands of its founder nor in those of his exponents, whether peripatetic, Arabian, or scholastic, was it formal enough, being blended with natural philosophy, transcendental metaphysics, and divinity." A purely formal logic may be accused of narrowness and rigidity; but it really has an "unlimited field before it in the living facts of idiomatic expression."

In this field of idiomatic expression the author is very much at home and he may well call it unlimited. The book is a veritable phrase-makers's museum, in which every idiom in Greek, Latin or English, that one ever dreamed of finds a place. How any man could interlard his discourse with such a host of them is truly marvelous. But the dexterity of the writer in this respect makes his book almost unreadable. One trips so much over the small thoughts that he is kept wondering what has become of the big ones.

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JOURNALS AND NEW BOOKS

REVUE DE PHILOSOPHIE. September, 1909. *Le problème critique et la perception extérieure* (pp. 243–255): P. GÉNY. – The perception of externality is purely and simply an act of apprehension. It is not, except in abnormal cases, subject to error. Error may arise, however, when, as is generally the case, the new perception is affected by the memory of previous perceptions. Hence the doctrine is critical, not naïve. *L'atome nécessaire* (pp. 256–271): A. VÉRONNET. – The first portion of this study, in the form of a preliminary discussion, considers Ostwald's theory of the ions and the thermodynamic theory. The former is one with the atomic theory in that, since ions are corpuscles, groups of atoms, or fragments of atoms, it admits in the same sense as the atomic theory the discontinuity of matter. Moreover, the theory sheds no new light on various chemical problems, such as that of constant proportions, stability, etc.

Thermodynamics, also, is not in a position to disregard atoms, for the establishment of some of its most ordinary formulæ depends upon the atomic hypothesis—in the determination of the coefficient of expansion of gases, for instance. *Le mécanisme moniste de Taine. II. Le système* (pp. 272–288): M. BAELEN. – In the philosophy of Taine we find only mechanism and determinism: physical laws are identical with mathematical verities, and the more one studies ethical problems the more evident is their analogy to the experimental, and even the exact, sciences. "The sum of things which exist is the world; the law or primitive formula from which one may derive this world, is God." *Revue critique de morale* (pp. 289–313): G. MICHELET. – Review of four recent books dealing with ethical problems. The first of these—Fouillée's *Morales des Idées-Forces*—marks a reaction against excess in the science of morals and purely objective research in ethics. The thesis proposed, however, namely that since the morality of an act depends not upon an exterior and superior commandment, and since it is necessary to consider the act exclusively in the subject, therefore the analysis on the part of the mind is sufficient—this thesis leads only to doubt and uncertainty. M. Leclère's *La Morale rationnelle dans ses relations avec la philosophie générale* is more hospitably received. The aim of the work is to justify rational ethics by showing that ethics as a whole is dependent upon reason, and proceeds necessarily and directly from reason. The thesis contains the doctrines of absolute spiritualism and universal ethics. M. Paul Gaultier's *L'Idéal moderne* is a worthy and commendable work, the object of which is to refute those who pretend to demonstrate the antinomies between Christianity and contemporary thought. In a short treatise M. Chollet answers affirmatively and satisfactorily the question: *La morale est-elle une science? Analyses et comptes rendus:* F. Maugé, *Le rationalisme comme hypothèse méthodologique.* J. H. Boex-Borel, *Le Pluralisme:* F. WARRAIN. H. Roulleaux-Dugage, *Théorie des principes de l'Absolu.* P. Volkmann, *Materialistische Epoche und Monistische Bewegung:* P. CHARLES. W. James, *Précis de Psychologie:* P. FONTANA. Ch. Henry, *Psychobiologie et énergétique:* F. WARRAIN. Sully-Prudhomme, *Le bien social:* T. DE VISAN. G. Deherme, *Auguste Comte et son œuvre:* T. DE VISAN. R. Bonola, *Die nichtenklidische Geometrie:* L. PÉTROVITCH. L. Davillé, *Leibniz historien:* H. OLLION. J. Dedien, *Montesquieu et la tradition politique anglaise en France.* G. Brett, *The Philosophy of Gassendi:* P. CHARLES. A Rosmini, *Maxims of Christian Perfection:* L. BILLIA. *Recension des revues. Chronique: Ernest Naville:* P. BORET.

REVUE PHILOSOPHIQUE. October, 1909. *Le VI^e congrès international de psychologie* (pp. 329–350): A. REY. – A criticism of the methods of the congress and an exposition of the leading discussions by topics. Positive psychology has clearly assumed an independent position as an experimental science entirely outside of any system of metaphysics. *Esthétique et sociologie* (pp. 351–374): L. ARRÉAT. – Art is not a social instrument, but esthetics may attempt the problem of determining what are the social conditions of those forms of life which constitute art. The

solution of this problem, however, lands us in psychology rather than in sociology. *La Philosophie néerlandaise* (2e article) (pp. 375–391): E. D'OLIVIERA. – A discussion of the philosophy of M. Van der Wijck in its relations to that of M. d'Opzoomer and certain foreign philosophers. *Revue générale. Les revues psychologiques allemandes:* FOUCAULT. *Analyses et comptes rendus.* E. Maugé, *Le rationalisme comme hypothese méthodologique:* L. DAURIAC. Fr. Paulhan, *La morale de l'ironie:* G. PALANTÉ. A. Leclère, *L'éducation morale rationnelle:* L. DUGAS. A. Joussain, *Le fondement psychologique de la morale:* FR. PAULHAN. J. Maxwell, *Le crime et la société:* G.-L. DUPRAT. W. MacDougall, *An Introduction to Social Psychology:* TH. RIBOT. A. R. Abelson, *Mental Fatigue and its Measurement:* B. BOURDON. Dr. Pierre Janet, *Les Névroses:* R. MEUNIER. Joffroy et Dupouy, *Fugues et vagabondage:* CH. BLONDEL. H. Wallon, *Délire de persécution:* P. C. Mansois Duprey, *Étude médico-sociale sur la responsabilité atténuée:* P. C.

Betts, George Herbert. *The Distribution and Functions of Mental Imagery.* Teachers College. *Columbia University Contributions to Education.* No. 26. New York: Teachers College, Columbia University. 1909. Pp. 99. $1.00 *postpaid.*

Gordon, Kate. *Esthetics.* New York: Henry Holt & Co. 1909. Pp. 309. $1.50.

Heath, T. L. *The Thirteen Books of Euclid's Elements. Translated from the Text of Heiberg, with Introduction and Commentary.* 3 vols. Cambridge University Press: 1908. £2 2s.

Ladd, George Trumbull. *Knowledge, Life, and Reason: An Essay in Systematic Philosophy.* New York: Dodd, Mead, & Co. 1909. Pp. 549. $3.50 *net.*

NOTES AND NEWS

THE *Nation* in its issue for October 21 quotes a letter from Mr. James Loeb, who has just endowed the Charles Eliot Norton Memorial lectureship in the Archeological Institute of America. Mr. Loeb has by previous gifts made it possible for the Institute to secure as lecturers several distinguished scholars, and by this last gift he further qualifies the Institute for its preeminent work. We quote in full the letter from Mr. Loeb, which gives not only the terms of the gift, but also commemorates the services of Mr. Norton to American scholarship.

PROFESSOR FRANCIS W. KELSEY,
President of the Archeological Institute of America,
Ann Arbor.

My dear Sir: I take pleasure in informing you that I have instructed my secretary to pay over to the treasurer of the Archeological Institute of America on October 21 $20,000 of the 5 per cent. bonds of the United States Steel Company for the endowment of the "Charles Eliot Norton Memorial Lecture Fund."

The annual income of $1,000 is to be paid as an honorarium to one or more distinguished archeologists for a course of lectures to be delivered before the

affiliated societies of the institute. In choosing the lecturers preference is to be given to European scholars, but, in the discretion of the council, invitations may also be extended to American scholars.

The experience of past years has amply demonstrated that a constantly growing public eagerly avails itself of the opportunity which these lectures afford to keep abreast of the latest researches of a science which is constantly increasing our respect for the achievements of antiquity. I deem it a privilege to endow the institute with a fund that will enable it, for all time, to help, not only its members, but also the general public, to enjoy the fruits of future archeological discovery.

October 21 marks the first anniversary of the universally regretted death of Professor Charles Eliot Norton, of Harvard University, and this day seems peculiarly appropriate for the creation of the endowment. He was the real father of the Archeological Institute of America. Thirty years ago he had the satisfaction of seeing the idea which he had long and enthusiastically fostered in the minds of a small company of scholars, take concrete form in the establishment of the institute, whose services to learning have amply justified his eager hopes. It is fair to say that one of the most far-reaching of these services lies in the opportunity given to a selected body of young students to inspire themselves at the actual sources of ancient culture. Our universities lose no time in appointing these young men, and their teaching is giving new life and vitality to an important branch of learning.

Two generations of Harvard students were privileged to hear from Professor Norton's inspiring lips what "man's sacrifice to beauty," as Mr. Henry James has well called man's artistic effort, has done for the uplifting of the race. To them the establishment of the Charles Eliot Norton Memorial Lecture Fund will, I hope, be a welcome event. To that larger circle who knew and valued Mr. Norton for his fearless devotion to his country, for the delightful essays and scholarly public addresses which marked the stages of a long and singularly distinguished life to the pursuit of *res humaniores*, it may serve as a token of the devotion and admiration of one of his pupils.

Yours faithfully,

JAMES LOEB.

Villa Waldfried, Murnau a/Staffelsee, September 8, 1909.

CESARE LOMBROSO, whose death occurred recently, was born in Verona in the year 1835. He studied in Turin, Pavia, and Vienna, and was able to finish his medical course at the age of twenty. At twenty-three he was made a military surgeon, and at twenty-six professor of psychiatry at Pavia. He was early made director at the asylum at Pesaro, and he became, subsequently, professor of psychiatry and legal medicine at Turin. His well-known work "L'Uomo delinquente" appeared in 1876. He founded the *Archivo di psichiatria, scienza penali ed antropologia criminale* in 1880.

THE eighteenth annual meeting of the American Psychological Association will be held in Boston and Cambridge during Convocation week in conjunction with the Society of Naturalists and the American Association for the Advancement of Science. The Association will hold its meetings on Wednesday, Thursday, and Friday, December 29, 30, and 31.

DR. E. H. HENDERSON, professor in education and psychology at Adelphi College, Brooklyn, New York, has been transferred to the chair of philosophy in that institution.